unless it is causal, in terms of either mechanistic or teleological causation, or of both. We must recognize that such explanation is always in terms of some dynamic theory of action, some theory of the way one thing acts upon or influences another; recognize also that the conceptions of force and energy, though they are arrived at by abstraction from experiences and observations of concrete events, have nevertheless proved themsejves to be very useful, and that we have no reason to restrict the use of them to the physical sciences, but are entitled to use them freely, with whatever degree of precision may be possible, in the biological and psychological sciences, their home and origin, from which they have been taken over and somewhat jealously appropriated by the physical sciences. Especially we see that we cannot allow the exponents of the mechanical biology to evade their obligation to find mechanical explanations of biological events, taking refuge from their difficulties under the excuse that the business of science is merely to describe.

Difficulties of Explanation in Biology

Our excursion on causation and explanation has shown us that the mechanical biology cannot be content with description of the processes of heredity and development, that it is under obligation to attempt the far more difficult task of finding dynamic explanations of those processes. Geneticists claim that in principle the problem is solved because they have been able to map the genes and chromosomes with considerable accuracy, approximating to and rendering highly probable the

possibility of correlating in the closely studied species every feature of the adult with certain of the genes known to occupy particular positions in the chromosomes. Now, it is